

I made in a piece of Lead a small Hole with a Pin, whose breadth was the 42th part of an Inch. For 21 of those Pins laid together took up the breadth of half an Inch. Through this Hole I let into my darkened Chamber a beam of the Sun's Light, and found that the shadows of Hairs, Thred, Pins, Straws, and such like slender substances placed in this beam of Light, were considerably broader than they ought to be, if the rays of Light passed on by these Bodies in right Lines. And particularly a Hair of a Man's Head, whose breadth was but the 280th part of an Inch, being held in this Light, at the distance of about twelve Feet from the Hole, did cast a shadow which at the distance of four Inches from the Hair was the sixtieth part of an Inch broad, that is, above four times broader than the Hair, and at the distance of two Feet from the Hair was about the eight and twentieth part of an Inch broad, that is, ten times broader than the Hair, and at the distance of ten Feet was the eighth part of an Inch broad, that is 35 times broader.

Nor is it material whether the Hair be encompassed with Air, or with any other pellucid substance. For I wetted a polished plate of Glass, and laid the Hair in the Water upon the Glass, and then laying another polished plate of Glass upon it, so that the Water might fill up the space between the Glasses, I held them in the aforesaid beam of Light, so that the Light might pass through them perpendicularly, and the shadow of the Hair was at the same distances as big as before.

The

The shadows of
Glass were all
and the Veins
like broad sha
of these shado
the refraction

Let the Circle
ADG, BEH
the Hair at f
three other ray
the like distan
where the ray
G, H, I and C
a Paper G Q;
cast on the Pa
points I and S
away. And
these two ray
Hair, and tur
any part of th
the Paper with
Paper contrary
Paper is at a g
is broad, and
great distance
Hair acts upon
their passing b
rays which pa
and weaker ac
greater and gr
For thence it
Hair is much